

CLAIMS:

1. A method of forming an optical film comprising:
providing a first film of a first material,
extruding a second material to form a second film in a molten state;
maintaining the second film in a molten state;
bringing the first film proximate the molten second film;
patterning the molten second film to form a plurality of structures, the
structures defining a plurality of cavities therebetween; and
solidifying the molten second film.
2. The method of claim 1 further comprising at least partially filling the
plurality of cavities with an optical material.
3. The method of claim 2 wherein the optical material is light absorbing.
4. The method of claim 1 in which the first material and the second material
are of a same polymer composition.
5. The method of claim 2 in which the optical material includes a black
pigment.
6. The method of claim 2 and further comprising laminating a shield to the
plurality of structures and the optical material.
7. The method of claim 2 and further comprising disposing a hard coat
adjacent the plurality of structures and adjacent the optical material.
8. The method of claim 1 in which each structure comprises a rib.

9. The method of claim 1 in which the first material comprises a light transmitting material and the second material comprises the light transmitting material and a plurality of light diffusing particles.
10. The method of claim 1 in which:
 - the step of providing the first film includes extruding the first material proximate a nip roll;
 - the step of extruding the second material includes extruding the second material proximate a cast roll;
 - the step of extruding the first material is performed simultaneously with the step of extruding the second material; and
 - the step of patterning the second film to form a plurality of structures includes compressing the second material against the cast roll to impart a pattern cast on the roll onto the second material.
11. The method of claim 10 in which the cast roll is formed of a metal selected from the group consisting of chromium, nickel, titanium, or an alloy thereof.
12. The method of claim 10 in which the nip roll rotates in a first direction and in which the cast roll rotates in a second direction opposite the first direction.
13. The method of claim 12 further comprising:
 - removing the optical film from the cast roll by winding the film about a carrier roll, the carrier roll rotating in the first direction.
14. The method of claim 13 further comprising:
 - heating the carrier roll.

15. The method of claim 14 further comprising:
running heated oil through an interior of the carrier roll.
16. The method of claim 14 further comprising:
heating the cast roll to greater than or about 66° C.
17. The method of claim 13 further comprising:
cooling the carrier roll.
18. The method of claim 17 further comprising:
running water through an interior of the carrier roll.
19. The method of claim 13 in which the carrier roll is formed of a metal selected from the group consisting of chromium, nickel, titanium, or an alloy thereof.
20. The method of claim 13 further comprising:
cooling the film by supplying air thereto prior to removing the film from the cast roll.
21. The method of claim 20 in which the step of cooling the film includes supplying air at about 620 kPa.
22. The method of claim 10 further comprising:
heating the nip roll.
23. The method of claim 22 further comprising:
heating the nip roll to greater than or about 52° C.

24. The method of claim 22 further comprising:
running heated oil through an interior of the nip roll.
25. The method of claim 10 further comprising:
cooling the nip roll.
26. The method of claim 10 further comprising:
heating the cast roll.
27. The method of claim 26 further comprising:
heating the cast roll to greater than or about 204° C.
28. The method of claim 27 further comprising:
heating the cast roll to greater than or about 252° C.
29. The method of claim 27 further comprising:
heating the cast roll to less than or about 282° C.
30. The method of claim 26 further comprising:
running heated oil through an interior of the cast roll.
31. The method of claim 10 in which the nip roll is formed of silicone rubber.
32. The method of claim 1 in which the steps of providing the first film and extruding the second material include heating a die for simultaneously extruding the first material and the second material.
33. The method of claim 32 in which the die is heated to about 293° C.